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The World's Industrial and Cotton Centennial Exposition,
NEW ORLEANS, LA., 1884-'85.

Medical Department, United States Army,
EXHIBIT-CLASS 4.

No. 6.

DESCRIPTION

OF THE

MICROSCOPES

AND

MICROSCOPICAL PREPARATIONS,

FROM THE ARMY MEDICAL MUSEUM,

WASHINGTON, D. C.

BY

SURGEON JOHN S. BILLINGS, U. S. A.,

Curator of the Museum.

HENRY McELDERRY,

Assistant Surgeon, U. S. A.,

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

New Orleans, La., 1884-'85.

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THE microscopes exhibited by the Army Medical Department are part of a collection which has been formed at the Army Medical Museum to illustrate the successive stages of development of the instrument, and of the various appliances connected with it, both optical and mechanical.

The majority of the instruments exhibited are of foreign make, and it is desired to obtain specimens of old instruments from American makers to show what has been done in this direction in this country.

JOHN S. BILLINGS,

Surgeon U. S. Army,

Curator Army Medical Museum.

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INDUSTRIAL AND COTTON CENTENNIAL EXPOSITION,
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DESCRIPTION OF THE MICROSCOPES,

FROM THE

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BY

SURGEON JOHN S. BILLINGS, U. S. A.,

CURATOR OF MUSEUM.

MICROSCOPES FROM THE ARMY MEDICAL
MUSEUM.

Spec. 99. Misc. Sect.

Large old "Andrew Ross & Co." with fine adjustment acting at back of limb. Hinged heel piece to foot. Polarizer screwing on bent arm sliding on tail-piece. Analyzer fitting over eye-piece; dark well on stem fitting on bent arm on tail-piece; disk of diaphragms fitting beneath stage with short cylindrical tube.

Spec. 100. Misc. Sect.

Large old "Andrew Ross & Co." Body-tube worked by rack on limb extending nearly the whole length at the back, (since called the Jackson model, focusing in front of body-tube at nose-piece, (since termed "Smith and Peck's fine adjustment,) double nose-piece (straight) [probably a later addition, as it is engraved "Ross, London," ? T. Ross.] Achromatic condenser with centering screws (4) and rack

work, fitting beneath stage by three projections corresponding to slots in the flange of condenser. Polarizer, (fitting similarly); analyzer, ["body prism" in separate brass box,] fitting in adapter at lower end of draw tube. Optical part of achromatic condenser in similar separate box engraved A, eye-piece.

Spec. 101. Misc. Sect.

Smaller "Andrew Ross & Co.," No. 65. Early type of Ross continued by Ross till after the death of T. Ross [the son of Andrew]. A, eye-piece, disc of diaphragms sliding in movable plate beneath stage, straight arm sliding on tail-piece to carry dark wells; two dark wells (one with cork); polarizer fitting beneath stage in moving plate; analyzer fits over eye-piece.

Spec. 102. Misc. Sect.

Old compound microscope by "J. Cuff," (middle of last century); sliding Lieberkühn, stage forceps, mirror, six lenses, eye-piece screws in, fish plate, animalculi cage, black and white disk, glass cell (broken), two diaphragms for mirror.

Spec. 103. Misc. Sect.

"Chevalier's Microscope Universel," with four eye-pieces, screws on box, and packs in drawer; this model has found much favor in the large laboratories on the continent, and is seldom met with—nearly all that Charles Chevalier made went into public institutions.

Spec. 104. Misc. Sect.

Microscope by Carpenter & Westley. (Very early model issued by the firm, say fifty years ago). Rack moving stage (coarse adjustment), fine adjustment top of limb as in Oberhäuser's, &c., one eye-piece, disk of diaphragms, spring stage, stage condenser.

Spec. 105. Misc. Sect.

Ellis' aquatic microscope with Wilson's (*vide* "Adams ")

combined. (Middle of last century). Two Lieberkuhn's, three simple lenses, trough, three slides of objects, box of talc covers, part of stage forceps.

Spec. 106. Misc. Sect.

Jones' improved aquatic microscope. Two Lieberkuhn's, three simple lenses, cloth-covered stage and ordinary stage; animalculi trough.

Spec. 107. Misc. Sect.

Brock's portable compound microscope, with four lenses screwed on base.

Spec. 108. Misc. Sect.

Very old solar microscope, with heliostat mirror and Wilson's "simple," with six powers, (probably dating soon after 1740, when G. Adams brought out his "solar microscope,") plane glass and long focus lens fitting in heliostat (for experiments on light), troughs, with four concave cells, two milled head-screws, and two plates for attaching heliostat.

Spec. 109. Misc. Sect.

Jones' solar microscope, [very good example,] (*vide* "Adams,") with sliding lens, Nos. 1, 2, 3, and 4, and long slide of 6 lenses, forceps, and two milled head-screws, and two plates for attaching heliostat.

Spec. 110. Misc. Sect.

Jones' small portable botanical microscope in case with fine adjustment at back, one Lieberkuhn's, one high power, three lateral swinging lenses in cells, live box, stage forceps, three slides of objects.

Spec. 111. Misc. Sect.

Harris' portable "opaque microscope in case," three Lieberkuhn's, with lenses, one simple lens, forceps, trough, object holders, (made about 1820).

Spec. 112. Misc. Sect.

Old compound microscope, by Dollond, with rotating disk of lenses at nose-piece, disk of diaphragms, folding feet; (compound eye lens to eye-piece,) live box, mirror with plastic plane, (last century or early in this).

Spec. 113. Misc. Sect.

Very old "Dellebarre," simple and compound (very complete), two Lieberkuhn's, with lenses, six lenses, spring stage, fish plate, trough, stage forceps, forceps, four slides of objects, screw for fixing microscope on tree, &c., box of tale covers, carrier for compound body, do., for simple lenses, two diaphragms, flat and concave glass stop plates.

Spec. 114. Misc. Sect.

Copy of Janssen's Magdeburg.

Spec. 115. Misc. Sect.

Abraham's achromatic prism.

Spec. 116. Misc. Sect.

Baker's traveling microscope devised by Mr. Moginic.

Spec. 117. Misc. Sect.

Microscope of J. L. Reddell, Professor of Chemistry in the University of Louisiana, binocular microscope in which, "behind the objective, and as near thereto as practicable, the light is equally divided and bent at right angles, and made to travel in opposite directions by means of two rectangular prisms," made in 1852 by Grunow Brothers, New Haven, Connecticut.

Spec. 118. Misc. Sect.

Binocular inverted microscope of J. and W. Grunow, New York.

Spec. 119. Misc. Sect.

New student microscope of Joseph Zentmayer, Phila., for use of visitors in examining microscopical preparations.

Spec. 120. Misc. Sect.

Large monocular microscope of Joseph Zentmayer, Phila., for use of visitors in examining microscopical preparations.

Spec. 121. Misc. Sect.

Gilbert & Sons' microscope. Sold by E. and W. Smith & Co., Liverpool.

Spec. 122. Misc. Sect.

Nachet's chemical microscope (inverted), constructed by Nachet et Fils, Paris, on the plan devised by Dr. J. Lawrence Smith, of Louisiana, for the purpose of reviewing objects from their *under* side when heat or re-agents are applied to them.

THE WORLD'S
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NEW ORLEANS, LA., 1884-'85.

LIST OF MICROSCOPICAL PREPARATIONS,

FROM

ARMY MEDICAL MUSEUM.

The microscopic slides exhibited are samples of the extensive series of preparations contained in the microscopical section of the Museum, which series now contains 8,859 slides.

JOHN S. BILLINGS,
Surgeon U. S. Army,
Curator Army Medical Museum.

NOTE.—Medical men acquainted with the use of the microscope, who desire to examine these microscopical preparations, will have every facility extended on application to the medical officer in charge of the Medical Exhibit, U. S. A., Dr. Henry McElderry, U. S. A.

LIST OF MICROSCOPICAL PREPARATIONS.

HISTOLOGICAL.

- 1 (No. —, Mic. Sec.) Brain of rabbit (injected).
- 2 (" 8749, " ") Ovary body, human (double stained).
- 3 (" 7336, " ") Medulla oblongata, human (trans. sect.).
- 4 (" 7392, " ") Nerve cells in spinal cord (trans. sect.).
- 5 (" 1214, " ") Nerve cells, spinal cord of calf.
- 6 (" —, " ") Retina, human (hæmatoxylin stained).
- 7 (" —, " ") Retina, human (macula lutea).
- 8 (" —, " ") Semilunar ganglion, human.
- 9 (" 5896, " ") Cornea of frog, (stained chloride of gold).
- 10 (" —, " ") Tongue of rabbit (injected).
- 11 (" 8047, " ") Trachea, human.
- 12 (" 395, " ") Section of fang of incisor tooth (longitudinal).
- 13 (" 396, " ") Section of fang of incisor tooth (longitudinal).
- 14 (" 397, " ") Section of incisor tooth (longitudinal).
- 15 (" 398, " ") Section of molar tooth (longitudinal).
- 16 (" 7346, " ") Mammary gland, human (trans. sect.).
- 17 (" 8841, " ") Submaxillary gland of rabbit.
- 18 (" 8840, " ") Liver of amphiuma.
- 19 (" —, " ") Small intestine of turtle (trans. sect.).
- 20 (" —, " ") " " " "
- 21 (" 7367, " ") " " rabbit, ilium, mucous membrane.

- 22 (No. 4769, Mic. Sec.) Muscle of rat (injected).
 23 (" 7381, " ") Muscular fibre, man.
 24 (" 7386, " ") Costal cartilage, man.
 25 (" 922, " ") Cartilage, rib of calf.
 26 (" 7383, " ") Tendon, man.
 27 (" 7380, " ") Elastic tissue, cow.
 28 (" 7379, " ") Connective tissue, man.
 29 (" 7378, " ") Adipose " "
 30 (" —, " ") Chicken embryos, 36 hours old
 (heads).
 31 (" 7206, " ") Placenta, 4 mos.
 32 (" 8843, " ") Orchis epididymis, rat.
 33 (" 7348, " ") Testicle of child (trans. sect.).
 34 (" 7374, " ") Penis of monkey "
 35 (" 8016, " ") Prostate gland (enlarged).
 36 (" 8839, " ") Ovarium and tube from girl aged 14
 years.
 37 (" —, " ") Supra-renal capsule of rabbit.
 38 (" —, " ") " " " human.
 39 (" 4789, " ") Kidney of dog (injected).
 40 (" 4922, " ") " rat "
 41 (" —, " ") Bladder of frog (nit. silver injection).

PATHOLOGICAL.

- 42 (" 8609, " ") Tubercle of lung (Guiteau).
 43 (" 7524, " ") " small intestine (tran. st.).
 44 (" 7528, " ") " " " (long. sect.).
 45 (" 7531, " ") " " " "
 46 (" 7538, " ") " " " "
 47 (" 7900, " ") " " "
 48 (" 7864, " ") Nailer's phthisis.
 49 (" 8654, " ") Syphilitic nodule in lung.

- 50 (No. 7578, Mic. Sec.) Hepatized lung.
 51 (" —, " ") " "
 52 (" —, " ") Apoplectic lung.
 53 (" 7770, " ") Cirrhosis of liver of cat.
 54 (" —, " ") Fatty liver.
 55 (" 6530, " ") " "
 56 (" —, " ") Nutmeg liver.
 57 (" 8701, " ") Amyloid liver.
 58 (" 7892, " ") Abscess of liver.
 59 (" —, " ") Amyloid degeneration with inter-
 stitial nephritis.
 60 (" 8789, " ") Kidney, Bright's disease.
 61 (" 7546, " ") Discoloration of skin, Addison's dis-
 ease.
 62 (" 8641, " ") Atheroma of aorta.
 63 (" 7411, " ") Cerebral artery, organizing throm-
 bus, man.
 64 (" 8834, " ") Atrophy of cerebellum, acute mania.
 65 (" —, " ") Cerebrum (Guiteau).
 66 (" 7289, " ") Colon in dysentery.
 67 (" 7220, " ") " "
 68 (" 7253, " ") " "
 69 (" 7266, " ") " "
 70 (" 7284, " ") " "
 71 (" 7254, " ") Ilium "
 72 (" 7457, " ") Enlarged Peyer's patch.
 73 (" 7453, " ") " solitary gland.

TUMORS.

- 74 (" 7100, " ") Colloid cancer of omentum.
 75 (" 8564, " ") Medullary cancer of breast.
 76 (" 2390, " ") Cancer of liver.

- 77 (No. 4037, Mic. Sec.) Cancer of gall duct.
 78 (" —, " ") Colloid cancer of stomach.
 79 (" 4293, " ") Cancer of pylorus.
 80 (" 4717, " ") " "
 81 (" 5689, " ") " breast.
 82 (" 6557, " ") " "
 83 (" 8603, " ") Cancerous nodule from peritoneal
 surface of small intestine.
 84 (" 8688, " ") Cancer of spleen.
 85 (" 8634, " ") Villous cancer of bladder.
 86 (" 8808, " ") Melanotic cancer of liver.
 87 (" 8565, " ") Medullary " breast.
 88 (" 8414, " ") Cancer of liver.
 89 (" 5756, " ") Muscle in vicinity of mammary
 cancer.
 90 (" —, " ") Epithelioma of lachrymal gland.
 91 (" 6980, " ") " of foot.
 92 (" 5869, " ") " of labium and peri-
 neum.
 93 (" 3723, " ") Epithelioma of lower lip (recurring).
 94 (" 6354, " ") " of leg.
 95 (" 6358, " ") " "
 96 (" 8552, " ") Glioma of brain.
 97 (" 8361, " ") Psammoma of choroid plexus.
 98 (" 7775, " ") Sarcoma of eye.
 99 (" 8836, " ") Large spindle-celled melano-sarco-
 ma from large toe.
 100 (" 6128, " ") Melanoma from back.
 101 (" 8759, " ") Tubular adenoma of breast.
 102 (" 6524, " ") Adenoma of breast.
 103 (" 7916, " ") " "
 104 (" 3885, " ") Condyloma.

- 105 (No. 7135, Mic. Sec.) Papilloma from uvula.
 106 (" ———, " ") " " penis.
 107 (" 8614, " ") Polypus from uterus of child.
 108 (" 8838, " ") " recti.
 109 (" ———, " ") Myoma of uterus.
 110 (" 5555, " ") Ovarian tumor.
 111 (" 2448, " ") " cyst (shows bone, cartilage, etc.).
 112 (" 8533, " ") Tumor from œsophagus (myoma).
 113 (" 6464, " ") " " parotid.
 114 (" 3872, " ") " " ear.
 115 (" 6932, " ") Goitre.

BOTANICAL.

- 116 (" 6591, " ") Nettle leaf, glandular hairs.
 117 (" 6584, " ") Saxifraga sarmentosa, stomata in clusters.
 118 (" 6583, " ") Sanguinaria canadensis, leaf, parenchymal cells.
 119 (" 6597, " ") Annular and spiral deposit from root of opuntia vulgaris.
 120 (" 6578, " ") Aspidium marginale, stomata.
 121 (" 6581, " ") Leaf of galium asprellum.
 122 (" 7750, " ") Deutzia crenata.

DIATOMS.

- 123 (" ———, " ") Pleurosigma angulatum.
 124 (" ———, " ") Surirella gemma.
 125 (" ———, " ") Frustulia saxonica.

INSECTS.

- 126 (" ———, " ") Scales of lepidisma (new species).
 127 (" 5523, " ") Ovipositor of saw fly.

128 (No. 5522, Mis. Sec.) Head and tongue of house fly.

129 (" 5511, " ") Young spider.

ENTOZOA, ETC.

130 (" 6542, " ") *Trachina spiralis*.

131 (" 6545, " ") " "

132 (" 1675, " ") Head of *tænia*.

BACTERIA.

133 (" 8829, " ") *Bacillus tuberculosis* (sputum.)

134 (" 8444, " ") " anthracis in lung.

135 (" 8452, " ") " " (blood.)

FIBRES.

136 (" 1888, " ") Flax fibre.

137 (" 1892, " ") Silk fibre.

138 (" 6226, " ") Cotton fibre.

HAIRS.

139 (" 7505, " ") Hair of sheep.

140 (" 7515, " ") " lamb.

141 (" 7504, " ") " cow.

142 (" 7517, " ") " calf.

143 (" 7508, " ") " llama.

144 (" 7511, " ") " mixed breed, llama and alpaca.

